

REMARKS

The Examiner is thanked for the indication that claims 14-16, 18-22 and 35-38 are allowed.

Claims 1, 8-16, 18-31 and 35-44 remain pending in the instant application. Claims 1, 8-13, 23-31 and 39-44 presently stand rejected. Claim 8 is amended herein. Entry of this amendment and reconsideration of the pending claims are respectfully requested.

Claim Objections

Claim 8 stands objected to for an erroneous dependency to cancelled claim 3. Accordingly, claim 8 has been amended to depend from claim 1.

Claim Rejections – 35 U.S.C. § 103

“To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. All words in a claim must be considered in judging the patentability of that claim against the prior art.” M.P.E.P. § 2143.03.

Independent Claims 1 and 23

Independent claims 1, 23, and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kwa (US 5,255,111) in view of Bodeep et al. (US 5,631,757) OR in view of Dietz et al. (US 7,072,587). Applicants respectfully traverse the rejections. (Note, the rejection of claim 28 is address below with claim 39.)

Independent claim 1 recites, in pertinent part,

wherein generating the optical transmit signal in response to the electrical transmit signal occurs **simultaneously** as generating the electrical receive signal in response to the received optical received signal.

Applicants respectfully submit that Kwa fails to disclose simultaneously sending and receiving optical signals to and from a waveguide.

To be sure, the Examiner acknowledges that Kwa “does not specifically teach generating the optical transmit signal in response to the electrical transmit signal occurs simultaneously as generating the electrical receive signal in response to the received

optical signal.” *Office Action* mailed 2/23/07, page 3. Accordingly, the Examiner cites Bodeep **OR** Dietz as each independently disclosing this missing element. Applicants respectfully, but earnestly disagree.

The Examiner cites FIG. 4 and col. 5, lines 11-67 and col. 6, lines 1-34 of Bodeep as disclosing this missing element. In fact, Bodeep discloses a transceiver that uses transmission periods that are separate from receive periods. The relevant portions of Bodeep are as follows:

As shown, **when** the laser current exceeds the threshold I_{th} the carrier density N is sufficient to **produce light from the laser**. **When** the laser current is less than I_{th} but higher than the transparency current I_t , **the laser can act as a detector...** (*Bodeep*, col. 5, lines 23-27)

In the arrangement of FIG. 4, the converter circuit 303 controls the biasing of the laser in interface 415. **During the master transmit time T_M , when the laser is to transmit a light signal** (e.g., logic 1 data), **converter circuit 303 biases the laser at or above the threshold current I_{th}** (601). If the laser is not to transmit a light signal (e.g., logic 0 data), it is biased below threshold current I_{th} , illustratively shown as 602 ... (*Bodeep*, col. 5, lines 48-54)

At time periods outside of T_1 and within T_2 (or, more generally, at all times other than T_1), the laser is biased to operate as a good detector and so is biased below I_t , as shown by 604. (*Bodeep*, col. 5, lines 61-63)

With reference to FIGs. 5 and 6 of Bodeep, the above cited portions of Bodeep clearly state that link interfaces 415 and 455 (see FIG. 4) operate as detectors or transmitters during independent time periods. To be specific, link interfaces 415 and 455 operate as detectors during a time outside of T_1 (see FIG. 6) when biased below I_{th} (see FIG. 5) and operate as transmitters during transmit time T_M when biased above I_{th} . FIG. 6 and the associated text cited above clearly illustrate that the transmit time T_M is NOT simultaneous with the detector or receive time defined by Bodeep as “time periods outside of T_1 and within T_2 (or, more generally, at all times other than T_1).”

Accordingly, Bodeep fails to disclose **simultaneously** sending and receiving optical signals to and from a waveguide.

Dietz also fails to disclose this element. The Examiner cites FIG. 5 and col. 3, lines 15-56 of Dietz as teaching this missing element. However, this portion of Dietz merely discloses a “single pin LED transceiver” driven by a single pin of a

microprocessor that operates simply by changing the firmware or software of the microprocessor. Nowhere within the portion cited by the Examiner does Dietz disclose generating the optical transmit signal in response to the electrical transmit signal occurs **simultaneously** as generating the electrical receive signal in response to the received optical received signal. In contrast, Dietz actually discloses that bi-directional communications are accomplished when “two receivers **take turns** to operate in **transmit and receive mode...**” Dietz, col. 3, lines 63-65. Accordingly, Dietz teach the opposite of claim 1 by disclosing bi-directional communications that take turns in the transmit and receive mode as opposed to simultaneously transmitting and receiving optical signals.

Consequently, the combination of Kwa and Bodeep OR Dietz fails to teach or suggest all elements of claim 1, as required under M.P.E.P. § 2143.03. Independent claim 23 includes similar nonobvious elements as independent claim 1. Accordingly, Applicants request that the instant §103(a) rejections of claims 1 and 23 be withdrawn.

Independent Claims 28 and 39

Independent claim 39 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Kwa in view of Bodeep OR in view of Dietz, in further view of Akimoto et al. (US 2003/0039010). Applicants respectfully traverse the rejections.

Independent claim 39 recites, in pertinent part,

adjusting a bit-rate of the electrical transmit signal and the optical transmit signal **in real-time during operation based on current conditions of the single communication link** to maintain a link integrity across the single communication link with a remote transceiver at a maximum bit-rate.

Applicants respectfully submit that the combination of Kwa, Bodeep, Dietz, and Akimoto fails to disclose, teach, or suggest adjusting a bit-rate in real-time during operation based on current conditions of the single communication link.

To be sure, the Examiner acknowledges, “[r]egarding claims 8, 31, and 39, Kwa as modified by Bodeep et al OR Dietz et al differs from claims 8 and 31 in that he does not specifically teach adjusting a bit-rate of the electrical transmit signal. Accordingly, the Examiner cites, para. [0073] and [0074] of Akimoto as discloses this missing element. These paragraphs of Akimoto merely disclose that a bit rate may be converted

between 125 Mbps or 1.25 Gbps. However, Akimoto fails to disclose adjusting a bit rate in real-time during operation **based on current conditions** of a communication link. In fact, Akimoto merely discloses,

In the optical communication unit 10 a **physical bit rate down-converter 14 that lowers the physical bit rate from 1.25 Gbps to a low physical bit rate (here, 125 Mbps)** is provided between the bi-directional network interface 11 and the optical transmitter 12. In the optical communication unit 20 a **physical bit rate up-converter 24 that raises the physical bit rate from 125 Mbps to 1.25 Gbps** is provided between the optical receiver 23 and the bi-directional network interface 21. (*Akimoto*, para. 0073)

Accordingly, the portion of Akimoto cited by the Examiner discloses that physical bit rate can be down converted or up converted. However, Akimoto fails to disclose adjusting the bit rate in real-time during operation based on current conditions of a communication link.

Consequently, the combination of Kwa, Bodeep, Dietz, and Akimoto fails to teach or suggest all elements of claim 39, as required under M.P.E.P. § 2143.03. Independent claim 28 includes similar nonobvious elements as independent claim 39. Accordingly, Applicants request that the instant §103(a) rejections of claims 28 and 39 be withdrawn.

Dependent Claims

The dependent claims are nonobvious over the prior art of record for at least the same reasons as discussed above in connection with their respective independent claims, in addition to adding further limitations of their own. Accordingly, Applicants respectfully request that the instant § 103 rejections of the dependent claims be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants believe the applicable rejections have been overcome and all claims remaining in the application are presently in condition for allowance. Accordingly, favorable consideration and a Notice of Allowance are earnestly solicited. The Examiner is invited to telephone the

undersigned representative at (206) 292-8600 if the Examiner believes that an interview might be useful for any reason.

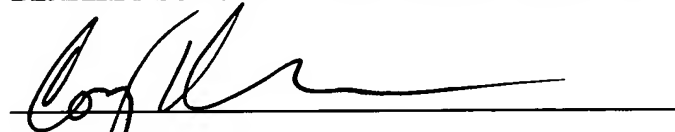
CHARGE DEPOSIT ACCOUNT

It is not believed that extensions of time are required beyond those that may otherwise be provided for in documents accompanying this paper. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a). Any fees required therefore are hereby authorized to be charged to Deposit Account No. 02-2666. Please credit any overpayment to the same deposit account.

Respectfully submitted,

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